

San Francisco Bay Conservation and Development Commission

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TO: Engineering Criteria Review Board (ECRB) Members

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SUBJECT: **Alameda Landing Waterfront Project, City of Alameda, Alameda County**
(For Board consideration on September 26, 2018)

Staff Summary

Project Name. The Alameda Landing Waterfront Project, City of Alameda

Applicant. The City of Alameda and Catellus Alameda Development, LLC

Project Representatives. Andrew Thomas (City of Alameda), Bill Kennedy (Catellus), Damir Priskich (Catellus), Dave Irving (Catellus), Haze Rodgers PE GE (Langan), Juan Baez, PhD PE (AGI), Steve Dickenson, PhD PE (New Albion Geotechnical), Doug Schwarm, PE (Atlas Geotechnical), Gayle Johnson PE (SGH), Justin D. Reynolds PE (SGH) and Chris Mills PE (BKF Engineers).

Project Site. The proposed project includes approximately a 22.8-acre development parcel including a 4.5-acre waterfront park development at the terminus of Fifth Street, in the City of Alameda, Alameda County. The project site is located along the Oakland-Alameda Estuary, opposite Jack London Square.

Prior Reviews. The project was first reviewed by the Engineering Criteria Review Board (Board or ECRB) on March 21, 2017. The original project consisted of a 40-acre development parcel that would include residential units, retail, office space, a hotel, a warehouse and shoreline access. The new proposal is on a development site that is half the size of the original and includes retail, residential, a water shuttle landing and kayak launch, and waterfront park located on a repurposed historic wharf pier.

Existing Conditions. The project site is a formerly industrial area, previously used as the U.S. Navy's Fleet Industrial Supply Center Annexation (FISCA). The proposed development would include the reutilization of a portion of the former FISCA wharf area. Built in 1944, the wharf was designed and constructed to support heavy rail and crane loading with thickened deck sections and dense pile spacing in areas that would remain to support the waterfront promenade. The soils inland of the wharf sections would be geotechnical-stabilized with a combination of techniques to control lateral displacement and support the intended building loads.

Since 2017, and after the first Board meeting in March of that year, the Alameda Landing Wharf property was subdivided into two properties. The western portion was sold to Bay Ship & Yacht Co. while the eastern portion was retained by the City for Catellus' development. Catellus provided a structural isolation gap along the western property line to separate the portions of its wharf property from that of Bay Ship & Yacht Co. The top of the wharf deck is cast-in-place concrete typically ranging in thickness from 10 to 48 inches supported by a mixture of 16- and 18-inch-square precast concrete piles, and 15-inch diameter tapered concrete piles cast in steel shells, referred to as Raymond piles. The wharf deck elevation is at approximately 13.27 feet¹. Most of the shoreline slope under the marginal wharf has rock protection.

Proposed Project. The proposed redevelopment project consist of a mix of uses including public access, retail, residential and a water shuttle/kayak launch. Specific elements and structural components of the project include the following:

1. **Public Access.** The approximately 90-foot-wide by 1,403-foot-long marginal wharf would be repurposed as waterfront park. *The waterfront park wharf and the areas of improved ground elements should be the focus of the ECRB.* There are no plans for the development of publicly-accessible building structures on the repurposed wharf.
2. **Residential Development.** The project would provide up to 400 residential units.
3. **Maritime.** The project includes a water shuttle landing and kayak launch.
4. **Demolition.** The project includes the demolition of the entire landside wharf, areas beyond approximately 90 feet from the waterside edge of the wharf. The remaining structure would remain for use as a waterfront park.
5. **Ground Improvement Methods.** The proposed ground improvement would consist of: (i) densification by Rapid Impact Compaction (RIC) technique near the existing surface loose fill, (ii) vertical wick drains and preloading on compressible Bay Muds, (iii) Load Transfer Platform (LTP) atop Concrete and Raymond piles to reduce vertical and lateral differential deformations, and (iv) a Cement Deep Soil Mixing (CDSM) buttress installed behind the existing rock dike for seismic lateral stability.

Field Investigations. Catellus commissioned field investigations to assess the current conditions of the wharf structure. According to project references, above water inspections were carried out between February 19 and March 5, 2018 and underwater structural inspections between February 19 and March 2, 2018.

The scope of the above water inspections included the topside deck, soffit, and piles of the wharf from Rows AB through K from Bents 129 through 268, and the underwater piles from Rows AB to G from Bents 129 through 268. Schematics of the wharf's structural nomenclature are provided in the references. Accordingly, the inspections were done in general accordance with standard practices of the American Society of Civil Engineers (ASCE) Manual of Practice No. 130 "Waterfront Facilities Inspection and Assessment" and ASCE Manual of Practice No. 101 "Underwater Investigations" for carrying out inspection and structural assessment of waterfront facilities and underwater investigations.

¹All vertical elevations, except as indicated, are given in reference to NAVD88 datum.

Further, the inspections covered 2,041 piles. The overall condition of the piles is rated as “Fair” with approximately 46% of the piles showing no damage or minor damage and 37% showing moderate conditions. Again, the ratings definitions are included in the references in the ECRB package.

Project consultant Simpson Gumpertz & Heger has provided two options for future maintenance. One involves performing regular underwater and above water inspections at intervals in the order of every 5 years as prescribed in the ASCE Manual of Practice No. 130. In addition, this option involves repairing the piles rated “major” or “severe” to restore their pre-damaged capacity.

For the second option, SGH recommends performing underwater and above water inspections in 5 to 10 years. Only those piles needed for safety would be repaired, taking advantage of the existing redundancy and extra piles present in the structure. Locations where piles rated “moderate” in the previous inspection had become “major” or “severe” would be identified and used to calibrate the rate of deterioration and plan future inspections and repairs to minimize overall maintenance costs. This option would consider the overall condition of the structure and the rate of deterioration when determining the next inspection interval.

Design Basis. According to the draft structural analysis entitled “Draft Alameda Landing Wharf Analysis,” dated July 3, 2018 by SGH, the proposed ground improvement, together with the demolition of the back portion of the wharf, are covered under CEBC (California Existing Building Code), Part 10, Chapter 4, Section 403, “Alterations.” The “Alterations” include the partial demolition of the wharf combined with the ground improvement. Based on the assessment, the governing failure mode for the as-is structure (the remaining wharf) is caused by excessive lateral loads on the piles due to embankment displacement and is not caused by inertial load by the superstructure on the piles.

An additional project design goal is the adoption of “non-collapse” in a Maximum Credible Event (Earthquake) consistent with the design philosophy for new structures embodied in ASCE 7, which is the basis for new design in the California Building Code. The meaning of “non-collapse” is defined as continued gravity support of the structure following an earthquake event. Further, the Alameda Landing Wharf Analysis under section 2.2 “Project Basis of Assessment” asserts that as long as the wharf maintains gravity load-carrying capacity, the project considers damage and movement resulting from the MCE earthquake event to be acceptable and no further code-based requirements for new design are applicable.

The evaluation of the performance of the wharf structure for the MCE event utilized the displacement-based analysis approach of Standard “ASCE/COPRI 61-14: Seismic Design of Piers and Wharves.” The Standard includes performance criteria to address “Minimal Damage,” “Controlled and Repairable Damage,” and “Life Safety Protection” performance levels. The project declares to have conservatively applied the “Life Safety Protection” performance levels in its evaluation with the MCE demand.

Commission Findings & Policies

Bay Plan Policies. The BCDC Bay Plan policies relevant to this project include Safety of Fills and Public Access.

Safety of Fills. The policies on the Safety of Fills seek to reduce risk of life and damage to property, special consideration must be given to construction on fill in San Francisco Bay. The following policies apply:

1. **Policy No. 1.** The Commission has appointed and empowered the ECRB to “establish and revise safety criteria for Bay fills and structures thereon.”
2. **Policy No. 2.** The BCDC Bay Plan indicates that even if a fill may be permissible, no fill or building should be constructed if hazards cannot be overcome adequately for the intended use in accordance with the criteria prescribed by the ECRB.
3. **Policy No. 3** requires the installation of strong-motion seismographs on all future major landfills with the guidance of and recommendations by the California Geological Survey, for purposes of data comparison and evaluation.
4. **Policy No. 4** requires that adequate measures be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project.

Policies on Public Access. Public access is required by the Commission as an integral component of development and usually consists of pedestrian and other nonmotorized access to and along the shoreline of San Francisco Bay.

1. **Policy No. 5** requires that public access be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.”

Board Questions

The Board’s advice and recommendations are sought on the following issues regarding the engineering criteria of the proposed project:

Safety of the Wharf:

1. The wharf would be repurposed as a waterfront park becoming the main public access area for the project. Based on the information, would the proposed deep soil mixing (DSM) along the shoreline be effective in preventing major damage or failure of the wharf pier? Would the “no-collapse” design goal be sufficient to ensure the permanency of the wharf after a major ground motion event?
2. After a major earthquake and if damages are incurred, can the wharf remain functional or be repairable for the future?
3. Would an ongoing pile monitoring and repair program ensure the upkeep and permanency of the wharf structure? Should the piles be repaired or replaced prior to the use of the wharf for public access?

Sea Level Rise:

1. What are the potential adverse effects and impacts to the proposed wharf (and associated public access) from anticipated sea level rise, and what are appropriate measures to achieve resiliency and adapt to these impacts?
2. Are the estimates of flooding relative to the wharf appropriate based on the 2018 OPC (Ocean Protection Council) State guidance? Would frequent flooding of the wharf render it unusable prior to the end of the wharf's expected life?

Material Enclosed with this Staff Report for September 26, 2018 ECRB Meeting

1. March 21, 2017 ECRB approved meeting minutes.
2. "Alameda Landing Wharf Analysis," prepared by Simpson Gumpertz & Heger, July 10, 2018.
3. "Above Water and Underwater Structural Inspections of the Alameda Landing Wharf in Alameda," April 16, 2018 by Simpson Gumpertz & Heger to Mr. Damir Priskich.
4. "Wharf Maintenance Planning, Alameda Landing Waterfront Project, Alameda, CA" July 20, 2018 by Simpson Gumpertz & Heger to Mr. Bill Kennedy.
5. "Supplemental Geotechnical Exploration/Alameda Landing Waterfront/Alameda, California," September 10, 2018 and prepared by Langan Engineering and Environmental Services, Inc. for Catellus Alameda Landing Development, LLC.
6. "Demolition Plan/City of Alameda, Alameda County, California," April 6, 2018 by Christopher C. Mills of BKF Engineers, Surveyors, Planners for Catellus.
7. "Seismic Lateral Spreading Mitigation via Soil Improvement by Deep Soil Mixing Buttress, Design Submittal," September 9th, 2018 by AGI / Advanced Geosolutions Inc.
8. Peer Review Comments and Responses to the Lateral Spread Ground Improvement by Deep Soil Mixing Buttress Draft Design by Advanced Geosolutions Inc (AGI) and its team of Sub-consultants, New Albion Geotechnical and Atlas Geotechnical, August 24, 2018.
9. "Alameda Landing Wharf Structural Demolition/Alameda, California," April 26, 2018 by Gayle S. Johnson, P.E. of Simpson Gumpertz & Heger for Catellus.
10. Coastal Engineering Letter, BKF (9-10-2018).